

Managing mining for sustainable development

EXECUTIVE SUMMARY

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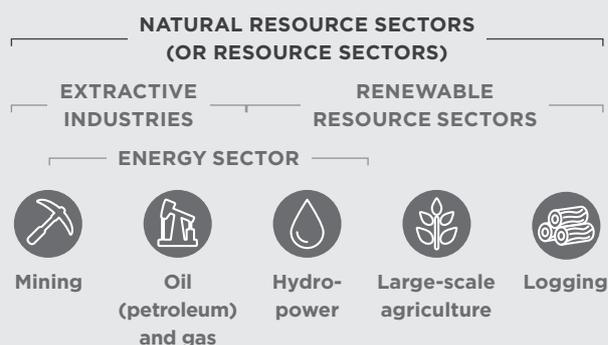
The sourcebook “Managing Mining for Sustainable Development” is a joint effort of the United Nations Development Programme (UNDP) and the United Nations Environment Programme (UN Environment), principally funded through the UNDP-UNEP joint programme Poverty-Environment Initiative (PEI) in Asia and the Pacific. The UNDP project implemented in partnership with the Swedish International Development Cooperation Agency (SIDA), “Supporting Regional and National Partnerships for the implementation of the UN Guiding Principles on Business and Human Rights in Asia-Pacific” also provided financial support.

The sourcebook aims:

To provide national and local policymakers, as well as international development partners, with an introduction to sustainability considerations related to social, environmental and economic impacts of mining, as well as to policy instruments and practices for managing mining towards sustainable development

To suggest ways for national and local policymakers and development partners to better incorporate social and environmental sustainability into their work, strengthening sustainable management of mineral resources at the national and subnational levels, and enhancing the economic benefits of mining for achieving the SDGs.

The sourcebook focuses on the management of industrial-scale mining, rather than artisanal and small-scale mining. Many of the experiences and recommendations are also relevant for the management of other natural resource-based sectors, such as oil, gas and hydropower, as well as industrial-scale agriculture and logging.





The extraction of minerals from the earth presents opportunities, challenges and risks to sustainable development. Minerals are essential for human well-being and are fundamental for virtually all sectors of the economy. However, mining also presents critical challenges and risks for sustainability. Mineral resources are finite and non-renewable, at least in human or biological timescales. Environmental and social problems and risks posed by mining are increasingly generating conflicts between mining companies and local communities. With declining ore grades for most minerals, the resource intensity and the amount of waste generated per unit of resource produced is likely to increase, and the associated environmental costs will prove a constant and growing challenge.

Mining activities can also contribute to sustainable development, particularly to its economic dimension. It can bring fiscal revenues to a country, drive economic growth, create jobs and contribute to building infrastructure. Thus, mining has both positive and negative implications for the Sustainable Development Goals (SDGs), with particularly strong impacts on 11 of the 17 the SDGs (Figure ES1).^A

Efforts to mitigate environmental impacts, protect human rights, promote social inclusion and enhance benefits from mining for development should be taken throughout the life of a mine and the whole value chain of mining. The impacts of mining are best understood when viewed through the various phases in the life of a mine: mineral exploration, mine development, mining operations and mine closure. Therefore, this sourcebook adopts a “life of a mine” approach (Figure ES2), which allows identifying concrete actions that governments and other stakeholders can take at different phases of mining.

FIGURE ES1. MINING AND THE SDGS



Source: Adapted from CCSI, SDSN, UNDP and WEF 2016.

FIGURE ES2. MAIN IMPACTS DURING THE LIFE OF A MINE

MINERAL EXPLORATION	MINE DEVELOPMENT	MINING OPERATIONS	MINE CLOSURE
<ul style="list-style-type: none"> Limited, but escalating impact as exploration progresses. 	<ul style="list-style-type: none"> Limited impact during studies, assessment, planning, but future impacts and mitigation opportunities are 'locked' at this stage. Major environmental and social impacts during mine construction. Surge in demand for jobs. Resettlement, displacement, in-migration. 	<ul style="list-style-type: none"> Major environmental and social impacts, depending on the nature and scale of the deposit and mining method. Demand for jobs, goods and services. Fiscal revenue flows. 	<ul style="list-style-type: none"> Winding down of operations lead to reduced impacts, but can leave lasting environmental legacies and social dislocation Loss of jobs and fiscal revenues

Source: Adapted by authors based on sources cited throughout this sourcebook

1. CCSI, SDSN, UNDP, and WEF 2016.
 2. Hard law includes laws and other legally binding instruments, whereas soft law includes quasi-legal instruments such as customary law that are not legally binding.



Orienting legal frameworks towards sustainable development

In this section:

- The domestic legal framework
- Mining contracts
- International treaties, conventions and soft law
- Voluntary standards
- Customary rules

The legal and normative framework of mining encompasses the domestic legal framework of host countries (countries where mining takes place), mining contracts, international hard and soft laws,² voluntary standards by the mining industry and customary rules. These elements of the legal, regulatory and normative framework are often inconsistent with each other and have critical gaps, particularly in areas that are essential for the protection of the human rights and livelihoods of people affected by mining. Addressing these gaps and inconsistencies is essential to improve the environmental and social outcomes of mining activities and to protect the human rights of those affected by mining. Coordination within the government is necessary to ensure that the legal, regulatory and normative framework is implemented in a coherent manner and in ways that are consistent with promoting environmental sustainability and sustainable social and economic development.

The domestic legal framework in mining, which consists of constitutions, laws, policies and regulations, needs to be coherent with international laws and norms, as well as customary rules practised in the country.

Mining contracts, usually entered with large investors, constitute another key element of the normative framework of mining in many resource-rich countries. However, developing countries with

less developed domestic legal frameworks tend to rely on contracts to fill legal and regulatory gaps. This may not be consistent with the public interest. Instead of a contract-based regime, a law-based regime is preferable, because it is more transparent, is applicable equally to all investors, and creates less burden for the government in administering, monitoring and enforcing. Contracts with mining investors can also limit the policy space for adopting more progressive laws and regulations that mitigate the negative environmental and social impacts and enhance the fiscal and economic benefits from mining to host countries. If contracts need to be used, then countries should limit contract terms that are open to negotiation, consider the adoption of model mining agreements, and ensure public disclosure of mining contracts.

The normative framework of mining is also shaped by international law, including international investment treaties, human rights laws and standards, and environmental conventions and treaties. Bilateral investment treaties, while important for attracting investment into host countries by protecting investors, have resulted, in some cases, in situations where investors' rights may be protected at the expense of the public interest and human rights in the host country. Thus, countries such as Ecuador, India and Indonesia have started assessing, revising and renegotiating or cancelling investment treaties they are party to.

International human rights instruments include both hard laws and soft laws. The core instruments for the protection of human rights – the International Covenant on Civil and Political Rights and the International Covenant on Economic, Social and Cultural Rights, as well as the ILO Convention No. 169 on the Rights of Indigenous Peoples, are key international law instruments relevant for mining. The main relevant soft law instruments are the United Nations Declaration on the Rights of Indigenous Peoples and the UN Guiding Principles on Business and Human Rights. Governments should make their domestic laws and regulations consistent with their international human rights commitments; they should also seek to incorporate principles and guidance from soft laws into their legal and regulatory framework to protect people affected by mining.

Similarly, various instruments in international environmental law should be taken into account



in shaping the domestic legal framework and the environmental regulation of the mining industry. These include conventions and treaties on mineral waste, water quality, nature preservation, biodiversity, air pollution and climate change.

Voluntary standards and codes adopted by the mining industry on environmental and social performance may exert a strong influence on the actions of mining companies and in this regard also constitute part of the normative framework. A major report commissioned by the mining industry in 2002, “Mining, minerals and sustainable development” (MMSD), critically examined the industry’s performance related to the environmental and social impacts, human rights, local development and fiscal contributions of mining. The report gave rise to many initiatives promoting responsible mining, including standards on environmental and social performance. Governments can make use of voluntary standards by the mining industry to strengthen domestic standards.

Customary rules form another important element of the normative framework relevant for mining. Customary land tenure systems, regulated through customary rules, are prevalent in many developing countries and indigenous territories. However, customary tenure systems are often not recognized by the law or are insecure. The insecurity of land rights defined by customary rules comes to the fore when mineral resources are discovered and mining development starts in these areas. As a result, people can be displaced, dispossessed and impoverished. Safeguarding the rights of indigenous peoples and other peoples over communal lands – such as forests and pastures – is important not only for protection of human rights; it is increasingly recognized as important for the sustainable management of these lands. The Voluntary Guidelines on the Responsible Governance of Tenure have been endorsed by the Committee on World Food Security. They provide guidelines for governments on strengthening land tenure systems, including recognition and protection of the legitimate tenure rights of people and communities with customary tenure systems.

This sourcebook makes recommendations to governments based on the experiences of countries, and on international normative instruments and standards.

RECOMMENDATIONS

Orienting legal frameworks towards sustainable development

Making domestic laws and regulations coherent with each other and sufficiently detailed to function as the core set of instruments for governing mining

Improving coordination between government agencies and between national and subnational governments

Considering moving from contract-based regimes to law-based regimes, avoiding using mining contracts to fill legal and regulatory gaps

Considering establishing model agreements which provide the policy space for environmental and social laws of the country, and limiting terms that are open to negotiations

Where mining contracts are made, paying special attention to provisions related to environmental impact mitigation, mine closure, resettlement, local content and employment

Ensuring transparency of mining contracts, including disclosure of beneficial ownership

Assessing implications of international investment treaties on the country’s commitments to sustainable development, human rights and the domestic policy space; negotiating terms in investment treaties to minimize these negative implications

Incorporating or strengthening the principles of consultation with local communities and free, prior and informed consent (FPIC) in domestic laws and regulations; and establishing or strengthening state remedy mechanisms for people affected by mining

Making use of voluntary standards developed by and for the mining industry, encouraging responsible mining investments and recognizing companies that adhere to strong standards

Recognizing and progressively registering customary land rights to protect poor and marginalized rural communities and indigenous peoples.



Protecting the environment and people

In this section:

- Trends and approaches in environmental regulation of mining
- Environmental and social impact assessment
- Environmental monitoring and auditing
- Community consultation, engagement and protection
- Managing mine closure

Over the past decades, the ‘polluter pays’ principle has become firmly embedded in the policy paradigm and environmental regulation has become more stringent around the world. While there are tensions between the objectives of attracting investment into mining and protecting the environment, evidence shows that it is possible to have *both* strong environmental regulation *and* a favourable investment environment in mining.

Traditionally, governments have used prescriptive approaches to environmental regulation (also called technology standards), which specify concrete technologies to be used for the mitigation of pollution. Non-traditional approaches to regulation, such as performance-based regulation which specifies targets for environmental performance and economic instruments, have become more widespread in recent years. Under certain conditions, these non-traditional forms of regulation – performance standards and economic instruments – can incentivize companies to devise or make use of more innovative solutions and cleaner technologies in a more cost-effective manner. These approaches can be conducive to improving the competitiveness of their mining industries while at the same time upholding strong environmental standards.

The main set of tools for mitigation and prevention of environmental and social impacts is the

family of Environmental Impact Assessments (EIAs) (Figure ES3), which by now have become embedded in legal frameworks of most countries. Mining project proponents are required to conduct EIAs and prepare Environmental Management Plans (EMPs). Governments can also conduct cumulative and strategic impact assessments in regions and countries with extensive mining activity to formulate regional or national mining plans and policies.

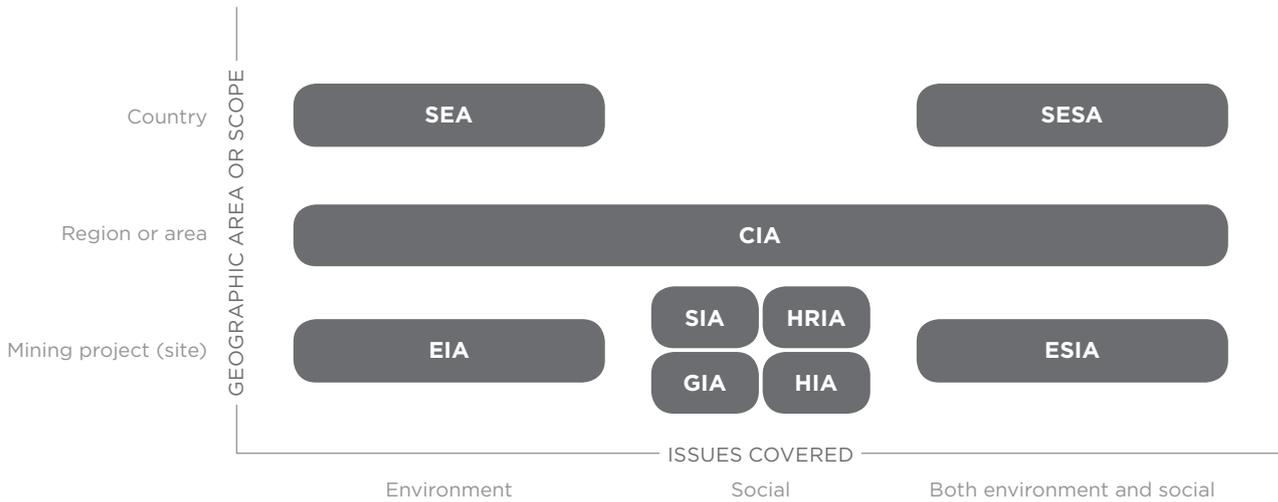
In recent years, governments and mining companies have increasingly recognized the social impacts of mining and are enabling communities affected by mining to have a say in mining-related decisions and processes. More countries are adopting laws and regulations that require mining companies to consult with local communities to be affected by mining. The entry point for local community consultation is often done through the EIA process. In Asia, for example, India, Mongolia and the Philippines have adopted requirements for community consultation during the EIA process.

Community engagement is much broader than just the EIA process and should take place throughout the life of a mine. However, it is most effective during specific points – when mining company has not yet made significant investments and not secured the required permits.

The principle of consulting with people in making decisions that affect their lives is expressed in the principle of free, prior and informed consent (FPIC), which is applicable to the rights of indigenous peoples in international law. FPIC is also applicable to other ‘land-connected peoples’, such as traditional and local communities living in rural areas near mining sites. The acceptance of the right of indigenous peoples to free, prior and informed consent has grown significantly in the 2000s in the international business community – including the mining industry. Community consultation and engagement helps to balance economic development considerations with social and environmental considerations, leading to decisions that are more sustainable and viable politically and socially. Developing country governments have been slower in accepting community consultation and engagement principles; nevertheless, community consultation is now increasingly adopted as a rule in laws and regulations – particularly in environmental ones.



FIGURE ES3. THE FAMILY OF ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENTS



In 2011, the UN adopted its Guiding Principles on Business and Human Rights, which provided a framework for protecting and respecting human rights and remedying rights violations and infringements. Leading mining companies, through the industry body, the International Council on Mining and Metals (ICMM), were closely involved in the consultations which led to the development of the UN Guiding Principles on Business and Human Rights; the ICMM “fully supports” the Guiding Principles. The framework rests on three pillars – protect, respect and remedy (Figure ES4). Governments have fundamental duties to protect people in their jurisdictions from human rights abuses by businesses. Businesses have a duty to respect human rights – not only complying with the

applicable laws, but also respecting internationally recognized human rights. Governments also have the duty to provide remedies to people whose rights and lives are affected by mining by having strong judicial mechanisms, as well as instituting non-judicial grievance mechanisms, such as national human rights commissions and ombudspersons. The “Protest, Respect and Remedy” framework had become widely accepted and can be applied within the domestic legal framework.

A special set of challenges arises during mine closures. While the physical closure takes place at the final phase of mining, mine closure is an ongoing process, starting from the very beginning of a mining project. However, the majority of mines are closed

FIGURE ES4. THE UN “PROTECT, RESPECT AND REMEDY” FRAMEWORK FOR BUSINESS AND HUMAN RIGHTS



The **State duty to protect** against human rights abuses by third parties, including business

The **corporate responsibility to respect** human rights

Greater **access to remedy** for victims of corporate-related abuse, judicial and non-judicial

Source: Based on United Nations Human Rights Council 2008

inadequately or prematurely, without exhausting the mineral deposit. Moreover, weak environmental regulation results in mine abandonment, which can have extensive environmental legacies and large costs for governments. Countries with a long history of mining, such as Australia, Canada and South Africa, have started documenting the huge environmental impacts of abandoned and orphaned mines and taking action to clean them up, incurring large public costs.

To reduce the risk of mine abandonment, governments should have in place effective regulations. They also require environmental financial assurance (EFA) from mining companies, a deposit payment before commencing mining operations which would be used for mine reclamation and rehabilitation should the company default on its obligations.

Mine reclamation and rehabilitation are the key stages of mine closure. While governments and communities expect mine sites to be restored to their original state, these expectations usually cannot be achieved on a sustained basis or in a cost-effective manner. Alternative, and perhaps more realistic, objectives of mine closure can include establishing stable landforms with functioning ecosystems and at least some of the native biota, or bringing the site to a point where it can be used for alternative uses and establishing non-native biota and ecosystems. Such realistic expectations about land use after mine closure should be communicated to affected communities before a mining project starts.

The predominant concern in mine closure has traditionally been with environmental aspects of mining. Since mining often takes place in peripheral, less developed regions and locations, the socio-economic impact of mine closure can heavily impact local communities. Therefore, mining companies and governments need to see, plan and manage mine closure in a more holistic way, which not only addresses the environmental impacts, but also socio-economic issues, such as re-employment of mine workers and the development of alternative economic activities in the area.

Governments play a major role as regulators, enablers and facilitators for improving the environmental and social performance of mining. This sourcebook makes recommendations for governments towards this end.

RECOMMENDATIONS

Protecting the environment and people

Designing environmental regulation that adequately protects the environment, which also establishes clear rules for investors

Where capacities of the government and the mining industry allow, considering adoption of more innovative approaches to environmental regulation, such as performance-based regulation and economic incentives

Making requirements for EIA and EMP for the mining industry, setting out clear roles for the government, mining companies, environmental services experts, civil society organizations and community groups

Establishing laws and regulations for mine closure that prevent large environmental legacies and public costs

Ensuring that affected communities are informed in advance of mining projects about land use options which are available after mine closure

Investing in capacities of regulators for monitoring and enforcement of regulations

Improving intra-governmental coordination mechanisms, such as those between mining and environmental ministries, local governments, human rights commissions and other government agencies

Enhancing access to mining-related information that is important and relevant to local communities

Fostering a culture of transparency in the government and in the mining industry

Opening legal avenues for local communities and indigenous peoples affected by mining to have a say in mining projects; defining minimum standards for adequate consultation and consent; investing in the capacities of communities affected by mining; and providing access to remedy for people affected by mining.



Realizing and enhancing the benefits from mining

In this section:

- Fiscal revenues
- Employment and economic growth
- Mining and local development
- Integrating mining into strategies and plans

The mining sector can bring significant economic benefits to a country by generating fiscal revenues and export earnings, relieving constraints to investment, spurring economic growth and creating jobs, as well as contributing to physical infrastructure building. However, realizing and enhancing these benefits require action, primarily from the government, but also from mining companies, local communities, employers and businesses in the country.

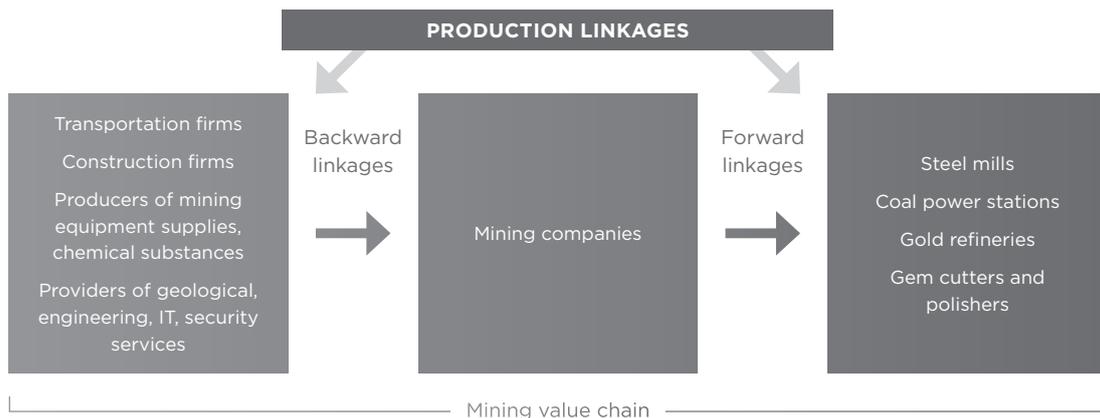
Fiscal revenues from the extractive industry – taxes, royalties and other payments – is one of the major reasons why governments seek to promote the growth of this industry in their countries. However, revenues from mining and benefits from these revenues do not flow in automatically. To translate fiscal revenues from the extractive industry into

sustainable development benefits, governments need to design and institute fiscal regimes that ensure a fair share of benefits to the country, which are also attractive for mining investors. Tools available to gauge whether the country is getting its ‘fair share’ and for managing the volatility of revenues from mining (or generally, the extractive industry) are reviewed in this sourcebook. Governments, along with companies, need to improve the transparency of fiscal revenues, which include disclosure of mining contracts and revenue flows. The Extractive Industries Transparency Initiative (EITI) is one of the key international initiatives for improving transparency.

Governments should also prudently manage fiscal revenues from mining and in a way that addresses the volatility of these revenues. They also need to invest these revenues in long-term development – social, infrastructure investments, financial savings and economic diversification.

Mining brings benefits by driving economic growth and creating jobs. In addition to direct jobs, mining creates indirect and induced jobs, which can be much greater in number compared with direct jobs in mining. Similar with manufacturing, mining is a sector with rapid technological progress, enabling people to learn and acquire skills. These skills can foster the productive capabilities of other companies in the country – which are arguably the single most important factor in driving economic development. Mining also drives economic growth through its linkages with the rest of the economy, such as by buying goods and services from supplier firms (backward linkages), and by supplying minerals to buyer firms (forward linkages) (Figure ES5).

FIGURE ES5. PRODUCTION LINKAGES IN THE MINING VALUE CHAIN



To increase employment and strengthen linkages from mining to the rest of the economy, governments should improve the competitiveness of local workers and the competitiveness of locally produced goods and services which can potentially supply the mining industry. Improving competitiveness is particularly important considering the rapid diffusion of automation technologies in the mining industry. Measures to improve competitiveness can be complemented by requirements for mining companies to increase local content – goods and services produced competitively in the host country or supplied by local workers and companies.

Local communities that live near mine sites can also gain economic benefits from mining. They have legitimate expectations that mining companies should not only mitigate the negative environmental and social impacts of their activities, but should also take actions to promote local development. Increasingly, mining companies accept these expectations and seek to address them as part of their Corporate Social Responsibility (CSR) initiatives. They do so by implementing or funding local development initiatives, usually focused on health, education, infrastructure and business development. In the past two decades, community development programmes have become widespread in the mining, oil and gas industry. In some cases, local development initiatives are formalized in community development agreements (CDAs).

Traditionally, governments have focused on economic, mainly fiscal, benefits from mining, while putting low priority on the environmental and social costs of mining. This is becoming increasingly untenable. Governments should make their strategies for managing mining consistent with their commitments to sustainable development.

Tools such as Strategic Environmental and Social Assessments (SESA) and Cost-Benefit Analyses (CBA) can assist in assessing the overall impacts of mining – not just financial. Despite pressures to consume and produce more minerals, mining is not inevitable – governments can decide to use the land and natural resources for other purposes – to preserve the environment or to promote economic activities that sustainably use renewable resources.

This sourcebook makes recommendations to governments to help realize and enhance the benefits of mining for development.

The lack of coherence between policies, laws, regulations and other actions of the government undermines the environment, the livelihoods and the rights of people, and the potential of a country to earn fiscal revenues from mining. Governments can use experiences and examples highlighted throughout this sourcebook to improve coherence of their policies, legal frameworks and actions to implement them to enhance the positive impact of mining on sustainable development and more effectively mitigate the negative impact.

The sourcebook also shows that governments are important, but are not the only actors that determine how mining impacts on economic, social and environmental dimensions of development. They need to collaborate with mining companies, local communities, international actors and other stakeholders in a way that promotes good environmental stewardship, efficient resource extraction, protection of human rights, and enhancement of economic benefits from mining.



RECOMMENDATIONS

Realizing and enhancing the benefits from mining

Designing and instituting progressive fiscal regimes that balance between the financial returns to the country (or the government) and those to the mining companies, in line with international comparisons

Making use of tools such as project-level mining fiscal models to estimate the government "take" from mining projects to design fiscal regimes and negotiate with mining companies

Ensuring that the fiscal regime is stable over time, which in the long term would help to move towards greater reliance on legal frameworks, rather than mining contracts

At the same time, ensuring flexibility of the fiscal regime to respond to the cyclical nature of the minerals and metals commodities markets, by building in contract negotiation clauses

Ensuring transparency of the fiscal regime (in the flows of resource revenues and in mining contracts) and access to information, by drawing on international transparency initiatives such as the EITI; ensuring a relatively straightforward fiscal regime that does not obscure transparency; and fostering an overall culture of transparency

Managing the volatility of resource revenues by using tools such as structural budget rules developed by the International Monetary Fund (IMF), and designing and instituting natural resource funds

Investing resource revenues in a way that increases (or does not deplete) the national wealth, into infrastructure, social service provision, financial assets and alternative sources of growth, setting priorities that are consistent with the country's level of development and needs

Using a combination of strategies to improve the competitiveness of domestic workers and firms and to set local content requirements to help enhance the benefits from the mining sector for employment, business development, and economic growth

Collaborating with and fostering collaboration between mining companies in order to design and implement local development initiatives, community development agreements and skills development initiatives

Supporting the capacity of local communities impacted by mining to take greater advantage of local development opportunities

Encouraging local development initiatives by mining companies to be synergized with government plans and programmes

Integrating the country's mining sector strategies with other plans and policies, such as national and regional development plans, fiscal revenue projections and budget plans, macroeconomic policies, land use plans, infrastructure plans, public service delivery plans, human resource development plans and education policies; and ensuring coherence between plans, policies, strategies and laws

PHOTO CREDITS

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Children of artisanal miners gaze at the Letpadaung copper mine in Myanmar. Many of these children work on the fringes of the mine to try to help their families escape poverty.

Page 1-2: Degol Hailu

Large-scale coal mining in Mozambique. Mining is an important driver of the Mozambican economy.

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